FORMPTO-1390(Modified) (REV 11-98) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE	ATTORNEY'S DOCKET NUMBER
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371	112740-114 U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR **09/701693**

INTERNATIONAL APPLICATION NO. PCT/DE99/01489	INTERNATIONAL FILING DATE 18 May 1999	PRIORITY DATE CLAIMED 03 June 1998

TITLE OF INVENTION

PROGRAM-CONTROLLED APPARATUS

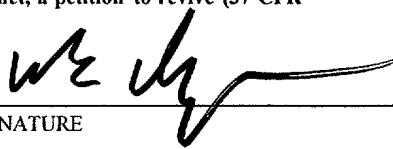APPLICANT(S) FOR DO/EO/US

Wolfgang Fraas et al.

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:

1. ☒ This is a **FIRST** submission of items concerning a filing under 35 U.S.C. 371.

2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under 35 U.S.C. 371.

3. ☒ This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1).

4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. ☒ A copy of the International Application as filed (35 U.S.C. 371 (c) (2))

     a. ☒ is transmitted herewith (required only if not transmitted by the International Bureau).

     b. ☐ has been transmitted by the International Bureau.

     c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).

6. ☒ A translation of the International Application into English (35 U.S.C. 371(c)(2)).

7. ☒ A copy of the International Search Report (PCT/ISA/210).

8. ☐ Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3))

     a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).

     b. ☐ have been transmitted by the International Bureau.

     c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.

     d. ☐ have not been made and will not be made.

9. ☐ A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)).

10. ☒ An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)).

11. ☐ A copy of the International Preliminary Examination Report (PCT/IPEA/409).

12. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)).

Items 13 to 20 below concern document(s) or information included:

13. ☒ An Information Disclosure Statement under 37 CFR 1.97 and 1.98.

14. ☒ An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included.

15. ☒ A **FIRST** preliminary amendment.

16. ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.

17. ☐ A substitute specification.

18. ☒ A change of power of attorney and/or address letter.

19. ☒ Certificate of Mailing by Express Mail

20. ☒ Other items or information:

> Submission of Drawings Fig.s 1-2 on two sheets

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 09/701693	INTERNATIONAL APPLICATION NO. PCT/DE99/01489	ATTORNEY'S DOCKET NUMBER 112740-114

21. The following fees are submitted:. BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :	CALCULATIONS	PTO USE ONLY

21.   The following fees are submitted:.

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

☐ Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2) paid to USPTO and International Search Report not prepared by the EPO or JPO $1,000.00

☒ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but Internation Search Report prepared by the EPO or JPO $860.00

☐ International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO $710.00

☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) $690.00

☐ International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) $100.00

ENTER APPROPRIATE BASIC FEE AMOUNT =			$860.00	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).			$0.00	

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	11 - 20 =	0	x	$0.00	
Independent claims	1 - 3 =	0	x $78.00	$0.00	
Multiple Dependent Claims (check if applicable) .			☐	$0.00	

TOTAL OF ABOVE CALCULATIONS =		$860.00	
Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) **(check if applicable)** .	☐	$0.00	

SUBTOTAL =		$860.00	
Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date (37 CFR 1.492 (f)). +		$0.00	

TOTAL NATIONAL FEE =		$860.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable).	☐	$0.00	

TOTAL FEES ENCLOSED =		$860.00	
	Amount to be: refunded	$	
	charged	$	

☒ A check in the amount of **$860.00**   to cover the above fees is enclosed.

☐ Please charge my Deposit Account No.   in the amount of   to cover the above fees.
A duplicate copy of this sheet is enclosed.

☒ The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment
to Deposit Account No.   **02-1818**   A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

William E. Vaughan Bell, Boyd & Lloyd LLC P.O. Box 1135 Chicago, IL 60690-1135	SIGNATURE _____ William E. Vaughan NAME _____ 39,056 REGISTRATION NUMBER _____ November 30, 2000 DATE

BOX PCT

IN THE UNITED STATES ELECTED/DESIGNATED OFFICE

OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER THE PATENT COOPERATION TREATY-CHAPTER II

5

APPLICANTS: Wolfgang Fraas et al.   DOCKET NO: 112740-114

SERIAL NO: GROUP ART UNIT:

EXAMINER:

10   INTERNATIONAL APPLICATION NO: PCT/DE99/01489
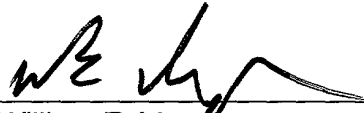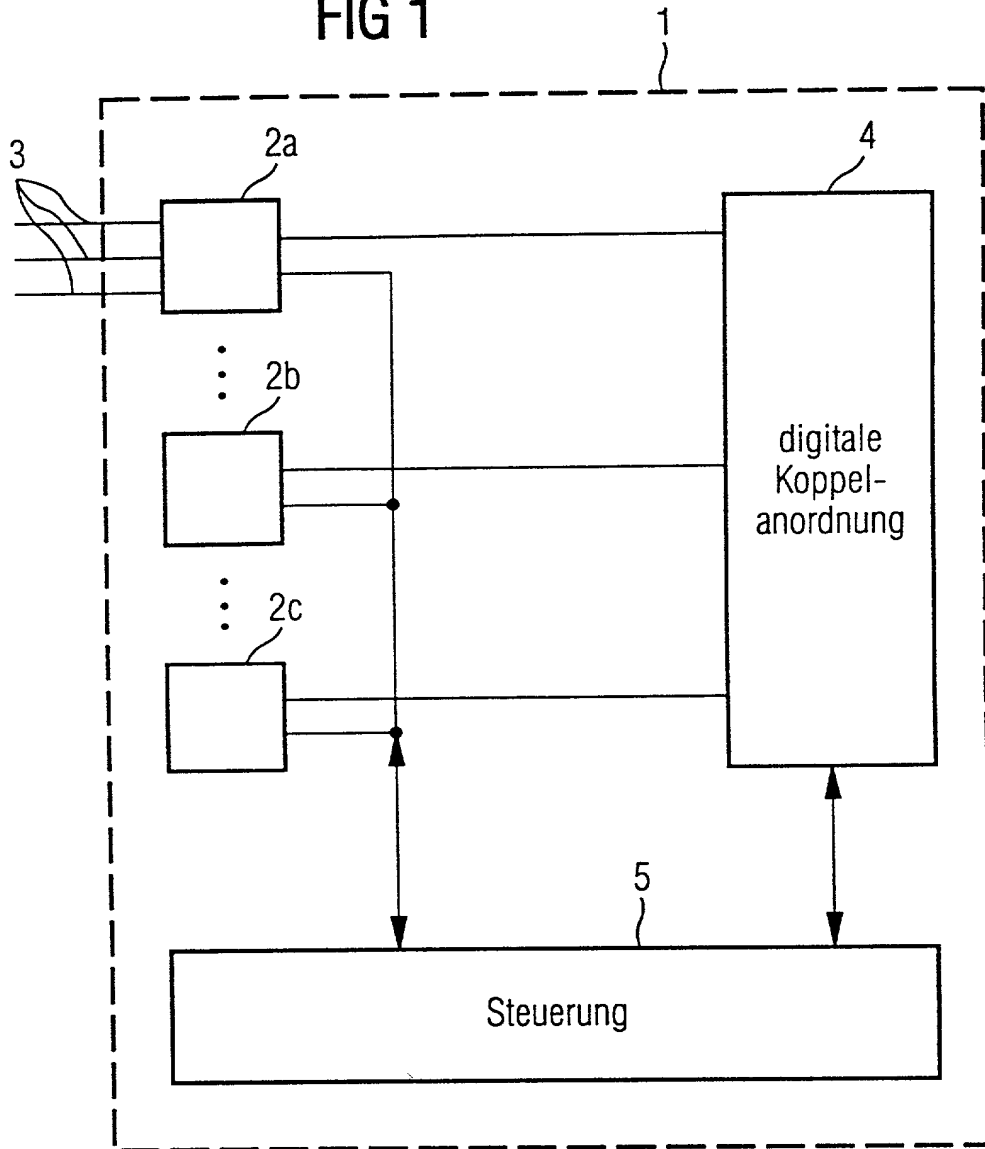
INTERNATIONAL FILING DATE: 18 May 1999

INVENTION: PROGRAM-CONTROLLED APPARATUS

Assistant Commissioner for Patents,
15   Washington, D.C. 20231

SUBMISSION OF DRAWINGS

Applicants herewith submit two sheets (Figs. 1-2) of drawings for the

20   above-referenced PCT application.

Respectfully submitted,

_____ (Reg. No. 39,056)
William E. Vaughan
25   Bell, Boyd & Lloyd LLC
P.O. Box 1135
Chicago, Illinois 60690-1135
(312) 807-4292
Attorneys for Applicants

30

-1-

FIG 1

1

3

2a

2b

2c

4

digitale
Koppel-
anordnung

5

Steuerung

FIG 2

TO
~~Zur~~
System-Hardware

5

9

6

CPU

7

System-software

8

CRYPTO
~~Krypto-~~
Chip

WITH PARAMETERS

LM#1(~~mit Parametern 1-A~~ TO ~~bis~~-1-C)
WITH PARAMETERS
LM#2(~~mit Parametern~~ 2-A ~~bis~~ TO 2-B)
WITH PARAMETERS
LM#3(~~mit Parametern~~ 3-A ~~bis~~ TO 3-F)
TO
⋮
WITH PARAMETERS
LM#n(~~mit Parametern~~ n-A ~~bis~~ n-i)
TO

WITH PARAMETERS

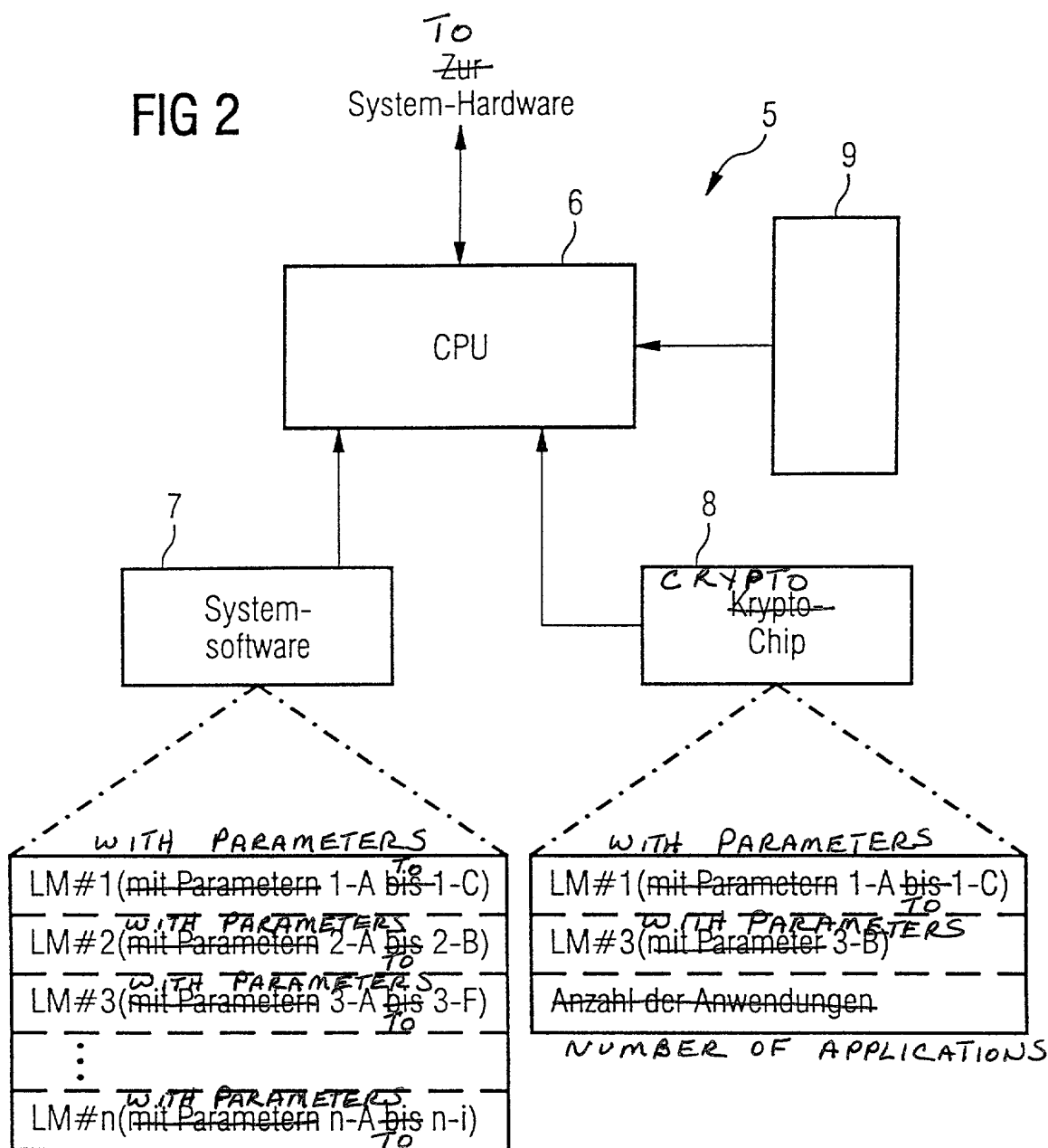| |
|---|
| LM#1(~~mit Parametern 1-A bis~~-1-C) |
| WITH PARAMETERS TO |
| LM#3(~~mit Parameter~~ 3-B) |
| ~~Anzahl der Anwendungen~~ |

NUMBER OF APPLICATIONS

BOX PCT

IN THE UNITED STATES ELECTED/DESIGNATED OFFICE

OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

UNDER THE PATENT COOPERATION TREATY-CHAPTER II

5

PRELIMINARY AMENDMENT

APPLICANT: Wolfgang Fraas et al.	DOCKET NO: 112740-114
SERIAL NO:	GROUP ART UNIT:
10	EXAMINER:
INTERNATIONAL APPLICATION NO:	PCT/DE99/01489
INTERNATIONAL FILING DATE:	18 May 1999
INVENTION: PROGRAM-CONTROLLED APPARATUS	

15 Assistant Commissioner for Patents,
Washington, D.C. 20231

Sir:
        Please amend the above-identified International Application before entry

20 into the National stage before the U.S. Patent and Trademark Office under 35 U.S.C.

§371 as follows:

In The Specification:

        On page 1, cancel lines 1-10 and substitute the following therefor:

--**S P E C I F I C A T I O N**

25   **TITLE**

PROGRAM-CONTROLLED APPARATUS

BACKGROUND OF THE INVENTION

Field of the Invention

        The present invention relates, generally, to a program-controlled apparatus

30 and, more particularly, to a data processing or telecommunications apparatus

controlled by software.

Description of the Prior Art--.

On page 1, line 11, cancel "Program-controlled apparatuses" and substitute therefor --A program-controlled apparatus--.

On page 1, line 11, cancel "systems" and substitute therefor --system--.

On page 1, line 12, cancel "comprise" and substitute therefor --includes--.

On page 1, line 15, cancel the ";".

On page 1, line 32, insert --thus-- before "can".

On page 1, line 32, cancel "thus"

On page 1, line 33, cancel ", so that" and substitute therefor --. As such,--.

On page 1, line 36, cancel "therefore".

On page 1, line 36, insert --, therefore,-- after "need".

On page 2, before line 3, insert the following centered heading:

<div align="center">--<u>SUMMARY OF THE INVENTION</u>--.</div>

On page 2, line 3, cancel "The" and substitute therefor --Accordingly, the--.

On page 2, lines 3-4, cancel "therefore based on the object of specifying" and substitute therefor --directed to--.

On page 2, cancel lines 8-13.

On page 2, line 14, cancel "the" after the "," and substitute therefor --a--.

On page 2, line 16, insert --a-- before "memory".

On page 2, line 16, cancel "means"

On page 2, line 17, cancel "store" and substitute therefor --stores--.

On page 2, line 22, cancel ", such that and substitute therefor --. As such,--.

On page 2, line 28, cancel "means are" and substitute therefor --is--.

On page 2, line 29, cancel "said crypto chip" and substitute therefor --it--.

On page 2, line 31, cancel the ";".

On page 2, line 32, insert --and locally-- after "permanently".

On page 2, line 33, cancel "locally".

On page 3, line 7, cancel "may".

On page 3, line 7, insert --may-- after "preferably".

On page 3, line 8, cancel "in this way".

On page 3, line 14, cancel the ";".

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On page 3, line 17, cancel "means" and substitute therefor --procedures--.

On page 3, lines 18-19, cancel ", said other identification means allowing" and substitute therefor --which would allow--.

On page 3, line 22, cancel ", one" and substitute therefor --. One--.

On page 3, line 23, cancel "being" and substitute therefor --is--.

On page 3, cancel lines 29-31and substitute the following therefor:

--Additional features and advantages of the present invention are described in, and will be apparent from, the following Detailed Description of the Preferred Embodiments and the Drawings.

DESCRIPTION OF THE DRAWINGS--

On page 3, line 34, cancel the "," and substitute therefor a --;--.

On page 4, line 2, cancel "shown in" and substitute therefor --from--.

On page 4, line 3, insert --teachings of the --before "present".

On page 4, before line 4, insert the following centered heading:

--DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS--.

On page 4, line 7, cancel "the invention" and substitute therefor --it--.

On page 4, line 17, cancel the "," and substitute therefor a --;--.

On page 4, line 17, insert a --,-- after "i.e.".

On page 4, line 20, cancel "comprises" and substitute therefor --includes--.

On page 4, line 21, cancel the "," after "4".

On page 4, line 35, cancel "analogue" and substitute therefor --analog--.

On page 4, line 36, cancel "analogue" and substitute therefor --analog--.

On page 5, line 2, insert --, for example,-- after "of".

On page 5, line 3, cancel ", for example,".

On page 5, lines 3-4, cancel ", for example".

On page 5, line 7, cancel "analogue" and substitute therefor --analog--.

On page 5, line 15, insert a --,-- after "paths".

On page 5, line 16, cancel the "," after "1" and substitute therefor a --;--.

On page 5, line 16, insert a --,-- after "particular".

On page 5, line 16, cancel the "," after "hardware".

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On page 5, line 16, insert a --(-- before "i.e.".

On page 5, line 16, insert a --,-- after "i.e.".

On page 5, line 17, cancel the "," and substitute therefor a --)--.

On page 5, line 20, cancel "below".

On page 5, include the paragraph which begins on line 22 in the paragraph which ends on line 21.

On page 5, line 23, cancel "(CPU)".

On page 5, line 33, cancel "with" and substitute therefor --wherein--.

On page 5, line 34, cancel "prescribing" and substitute therefor --prescribes--.

On page 6, line 8, insert a --,-- after "7".

On page 6, line 9, insert a --,-- after "database".

On page 6, line 21, cancel the ",".

On page 6, line 27, cancel the ";".

On page 6, line 32, cancel ", said" and substitute therefor --. This--.

On page 6, line 33, cancel "comprising" and substitute therefor --including--.

On page 6, line 34, insert a --,-- after "algorithms"

On page 6, line 34, cancel "defining" and substitute therefor --it defines--.

On page 7, line 3, cancel "i.e.".

On page 7, line 4, insert --either-- after "to".

On page 7, line 7, cancel ", so that" and substitute therefor --. As such,--.

On page 7, line 11, cancel the "," and substitute therefor a --;--.

On page 7, line 11, insert a --,-- after "i.e.".

On page 7, line 16, cancel "on account" and substitute therefor --because--.

On page 7, line 19, cancel "comprises" and substitute therefor --includes--.

On page 7, line 22, insert a --,-- after "can".

On page 7, line 22, insert a --,-- after "thus".

On page 7, line 28, cancel "by way of" and substitute therefor --for--.

On page 8, line 14, cancel "means" and substitute therefor --processes--.

On page 8, after line 21, insert the following paragraph:

--Although the present invention has been described with reference to specific embodiments, those of skill in the art will recognize that changes may be made thereto without departing from the spirit and scope of the invention as set forth in the hereafter appended claims.--

On page 12 (last page), cancel lines 1-3 and substitute the following centered heading therefor:

--**ABSTRACT OF THE DISCLOSURE**--.

On page 12, line 5, cancel "Program-controlled" and substitute therefor --A program-controlled--.

On page 12, line 5, cancel "(1)".

On page 12, line 7, cancel "(8)".

On page 12, line 9, cancel "said" and substitute therefor --with--.

On page 12, line 11, cancel "(7)".

On page 12, line 12, cancel "(1)".

On page 12, line 13, cancel "(7)".

On page 12, line 15, cancel "(8)".

On page 12, line 17, cancel "(6)".

On page 12, line 18, cancel "(1)".

On page 12, line 19, cancel "(8)".

On page 12, line 20, cancel "(6)".

In the Claims:

On page 9, cancel line 1, and substitute the following left-hand justified heading therefor:

--**We Claim As Our Invention:**--.

Please cancel claims 1-11, without prejudice, and substitute the following claims therefor:

12.   A program-controlled apparatus, comprising:

a hardware device for performing a particular function in the program-controlled apparatus;

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a controller, program-controlled by a piece of system software, for controlling the hardware device; and

a memory, permanently connected to the controller locally, for storing individual user data defining a respective user's possible scope of use of the
5   program-controlled apparatus, the controller controlling the hardware device only within the scope of use defined by the individual user data.

13.   A program-controller apparatus as claimed in claim 12, further comprising:
10   a central control unit and a database as the controller which provide operating data for the system software, the central control unit accessing the individual user data stored in the memory and, on the basis of the individual user data, reading out particular operating data stored in the database which corresponds to the respective user's possible scope of use of the program-controlled apparatus,
15   and driving the hardware device on the basis of the operating data.

14.   A program-controlled apparatus as claimed in claim 13, wherein the memory is incorporated in a back plane of the central control unit.

20   15.   A program-controlled apparatus as claimed in claim 13, wherein the database is part of the system software.

16.   A program-controlled apparatus as claimed in claim 13, wherein the operating data stored in the database defines all service features offered
25   by the program-controlled apparatus.

17.   A program-controlled apparatus as claimed in claim 16, wherein the individual user data stored in the memory defines the service features offered by the program-controlled apparatus which are only accessible to the
30   respective user.

18.   A program-controlled apparatus as claimed in claim 12, further comprising:

an identification device for inputting an identification code, the controller allowing the hardware device to be controlled independently of the individual user

5   data store in the memory if the identification code input via the identification device matches a particular prescribed access code.

19.   A program-controlled apparatus as claimed in claim 18, wherein the controller allows the hardware device to be controlled on the basis of the

10   entire operating data stored in the database, independently of the individual user data stored in the memory, if the identification code input via the identification device matches the particular access code.

20.   A program-controlled apparatus as claimed in claim 18, further

15   comprising:

a smart card reader as the identification device.

21.   A program-controlled apparatus as claimed in claim 12, further comprising:

20   a memory chip as the memory.

22.   A program-controlled apparatus as claimed in claim 12, wherein the program-controlled apparatus is a program-controlled telecommunications system, and the hardware device includes a switching network for setting up a

25   communication link between subscribers associated with the telecommunications system.

REMARKS

The present amendment makes editorial changes and corrects typographical

30   errors in the specification in order to conform the specification to the requirements

of the United States Patent practice. No new matter is added thereby. Original claims 1-11 have been canceled in favor of new claims 12-22. However, claims 12-22 have been presented solely because the revisions by bracketing and underlining which would have been necessary in claims 1-11 in order to conform those claims

5   to the requirements of United States Patent practice would have been too extensive, and thus would have been too burdensome. The cancellation of claims 1-11 does not constitute an intent on the part of the Applicants to surrender any of the subject matter of claims 1-11.

Early consideration on the merits is respectfully requested.

10   Respectfully submitted,

_____ (Reg. No. 39,056)
William E. Vaughan
Bell, Boyd & Lloyd LLC
15   P.O. Box 1135
Chicago, Illinois 60690-1135
(312) 807-4292
Attorneys for Applicants

Description

Program-controlled apparatus

5   The present invention relates generally to a
program-controlled apparatus in accordance with the
preamble to claim 1; in particular, the present
invention relates to a data processing or
telecommunications apparatus controlled by means of
10   software.
       Program-controlled apparatuses or systems
comprise system hardware in order to perform or carry
out particular functions of the program-controlled
apparatus. The system hardware is supplemented by
15   system software, which provides operating data for the
operation of the program-controlled apparatus and thus
represents the basis for control of the system
hardware.   In   known   program-controlled
telecommunications systems, copy protection in the form
20   of the so-called dongle concept is then used in order
to ensure that the system software is used only
together with that system hardware for which the user
has also purchased licenses. This is intended to
prevent unauthorized copying of the system software
25   from individual system hardware to other system
hardware.
       With the dongle concept, the system checks at
startup whether the dongle has been placed or plugged
into the system. If this is not the case, the system
30   cannot be operated. The problem with this concept,
however, is the fact that the dongle is removable and
can thus be placed into another system for which no
license has actually been purchased, so that the
correlation check for the hardware and software of a
35   system can be artificially corrupted. There is
therefore a need for an improved concept which ensures
that the system software

can be used only insofar as it is also covered by licenses.

The present invention is therefore based on the object of specifying an improved program-controlled
5 apparatus which reliably prevents unauthorized copying of the system software and/or unauthorized use of the system software.

The present invention achieves this object by means of a program-controlled apparatus having the
10 features of claim 1. The dependent claims describe preferred and advantageous refinements of the present invention, which, for their part, contribute to improved protection of the system software.

According to the present invention, the
15 program-controlled apparatus is used together with memory means, for example in the form of a crypto chip, which store individual user data stipulating and defining the possible scope of use of the system software for the respective user. When the program-
20 controlled apparatus is put into operation, this user data is read out and made the basis for control of the system hardware, such that the system hardware is driven by the system software only within the scope of use defined by the individual user data. In this way,
25 only predefined service features or a particular number of applications of the system software may be enabled for particular users.

If the memory means are produced in the form of a crypto chip, said crypto chip may be incorporated, by
30 way of example, in the multilayer backplane of the central processor unit of the apparatus, so that it is permanently connected to the central processor unit, i.e. the system software, locally and is particularly difficult to access. When the program-controlled
35

apparatus is delivered, customer-specific keys or algorithms are programmed in this chip, for example, so that the system software delivered with the apparatus is able to run only within the scope defined by the

5 programmed keys/algorithms. Although the system software and the associated database for the program-controlled apparatus may preferably be copied for backup purposes, in this way they are not able to run on other systems or apparatuses without the crypto

10 chip.

So that diagnosis/maintenance of the program-controlled apparatus can still be carried out, an external smart card reader, for example, may be connected for this purpose, so that the entire system

15 software is accessible again when an authorized person's appropriate smart card is inserted. The use of other identification means for diagnosis/maintenance purposes is likewise conceivable, said other identification means allowing a check on the entry of a

20 particular code authorizing diagnosis/maintenance.

The present invention may be applied to various types of program-controlled apparatuses, one preferred area of application being that of data processing or telecommunications apparatuses. In particular, the

25 present invention may be used in telecommunications systems used in private networks for setting up communications links between subscribers associated with the telecommunications system.

The present invention is explained in more

30 detail below with the aid of a preferred illustrative embodiment and with reference to the appended drawing.

Figure 1 shows a simplified block diagram of a program-controlled apparatus in the form of a program-controlled telecommunications system, and

35

Figure 2 shows a simplified block diagram of the control device shown in Figure 1 in accordance with the present invention.

Although the present invention can be applied
5   generally to program-controlled apparatuses of various types in which hardware and software are provided separately from one another, the invention will be explained in more detail below with particular reference to a telecommunications system.

10   Figure 1 shows a simplified block diagram of a telecommunications system 1, such as is used in private communications networks, for example. The telecommunications system 1 is used for switching voice, image, text and data connections between the
15   subscribers associated with the telecommunications system 1. The telecommunications system 1 preferably operates digitally, i.e. digital information transmission takes place within the telecommunications system 1.

20   The telecommunications system 1 comprises, as central hardware device, a digital switching network 4, which represents the actual switching element in the telecommunications system 1. The switching network 4 allows so-called position-based switching from one
25   transmission line connected to the telecommunications system 1 to another transmission line, and so-called time-based switching from one transmission channel to another transmission channel. The digital switching network 4 is generally split into individual switching
30   network modules or switching stages.

The telecommunications system 1 has different associated subscribers and transmission lines connected to the digital switching network 4 via line terminations 2a-2c. If necessary, the line terminations
35   2a-2c perform analogue/digital conversion in the incoming direction and digital/analogue conversion in the outgoing

direction. The line terminations 2a-2c can be connected to the digital switching network 4 by means of PCM transmission lines, for example, having 64 channels, for example. For the sake of simplicity, Figure 1 shows
5 a plurality of subscriber lines 3 only for the line termination 2a, these subscriber lines being able to be associated both with analogue and digital subscriber terminals. Naturally, the line terminations 2b and 2c are each connected to a multiplicity of subscriber
10 lines 3 as well.

The telecommunications system 1 is program-controlled. This is done using a controller 5 which receives the requests for connections from the subscribers in the telecommunications system 1, sets
15 the paths and controls the entire telecommunications system 1, in particular the hardware, i.e. the switching network 4, of the telecommunications system 1.

The design of the controller 5 shown in Figure
20 1 will be explained in more detail below with reference to Figure 2.

The central module in the controller 5 is a central control unit (CPU) 6 in the form of a central processor used to drive the system hardware in the
25 telecommunications system 1. The central control unit 6 is program-controlled and, for this purpose, is driven by a piece of system software 7 which provides a particular database containing operating data for operating the system hardware. In this way, the system
30 hardware or the telecommunications system 1 can be provided for a multiplicity of service features LM # 1 - LM # n defined by the system software 7 or its database, with the system software 7, in particular, prescribing for each service feature the operating
35 parameters it requires. With reference to Figure 2, this means that the first service feature LM # 1 may be produced with three different operating parameters 1-A

GR 98 P 1839

to 1-C, for example, whereas only two different operating parameters

2-A and 2-B are possible for the second service feature LM # 2. Overall, the system software 7 thus equips the telecommunications system 1 to produce n service features. These service features may be generally known

5 facilities for digital telephone networks, such as "call waiting", "call diversion", "call forwarding", "calling line identification presentation" or "advice of charge", etc. The system software 7 or the corresponding database thus provides the central

10 control unit 6 with all the operating information necessary for operating the telecommunications system 1, so that the telecommunications system 1 or its system hardware can be program-controlled.

The system software 7 and the associated

15 database can be copied by the respective user for backup purposes. However, to ensure that the system software 7 or its database is not able to run on other systems or telecommunications systems with different system hardware, the central control unit 6 in the

20 telecommunications system 1 is coupled to an additional memory 8, which contains individual user data. In particular, this memory 8 may be a crypto chip, as is generally used in connection with smart cards. The memory 8 is permanently coupled to the central control

25 unit 6 locally and, by way of example, is incorporated in the multilayer backplane of the central control unit 6, so that the memory 8 cannot be isolated from the central control unit 6.

When the telecommunications system or the

30 program-controlled apparatus is delivered, the aforementioned individual user data is programmed, i.e. stored, in this memory 8, said individual user data comprising, by way of example, customer-specific keys or algorithms and defining the respective

35

user's possible scope of use of the system software or of the telecommunications system.

Since the memory 8 is permanently, i.e. not removably, coupled to the system software or the central control unit 6, self-identification of the system hardware using the memory 8 or the information stored in it is possible, so that an unambiguous 1:1 association between the system software and the system hardware in the telecommunications system is provided, and the system software 7 is assured not to be able to run on another telecommunications system, i.e. in conjunction with other system hardware. Since, in particular, the memory 8 is permanently coupled to the central control unit 6, the problem described in the introduction regarding the dongle concept, which arises on account of the interchangeability of the dongle, is not encountered on the basis of the present invention.

As Figure 2 shows, the individual user data stored in the memory 8 comprises, in particular, information stipulating the respective user's possible scope of use of the system software 7. The user data stored in the memory 8 can thus stipulate which of the service features offered by the telecommunications system or the system software 7 are accessible for the respective user, and how many different applications are covered by the license associated with the memory or the crypto chip 8. In the example shown in Figure 2, by way of example, the user has access only to service features LM # 1 and LM # 3, with service feature LM # 1 additionally being able to be operated only with parameters 1-A and 1-C, for example, whereas service feature LM # 3 can be accessed by the user only with operating parameter 3-B. This ensures that the system software 7 delivered with the system hardware is able to run only within the

scope ordered by the respective user beforehand.

Despite the restriction of the scope of use by the user data stored in the memory 8, the case may arise that the entire system software 7 needs to be

5   accessed for diagnosis or maintenance purposes. For this purpose, the central control unit 6 can be coupled to an interface 9 to which, by way of example, an external smart card reader may be connected, so that an authorized person can identify himself to the

10 telecommunications system or to the central control unit 6 using a special smart card and can cancel the restrictions on the system software 7 which are prescribed by the memory 8. Of course, it is also possible to use other identification means allowing

15 identification of a person authorized to access the entire system software 7 or its entire database. Thus, by way of example, provision may be made for a keyboard entry instead of a smart card reader, on which basis entry of an appropriate access code removes the

20 restrictions in the memory 8 and the authorized person can access the entire system software 7.

Patent claims

1.   A program-controlled apparatus,

having a hardware device (2a-2c, 4) for performing a
5 particular function in the program-controlled apparatus
(1), and

having control means (6, 7), program-controlled by a
piece of system software, for controlling the hardware
device (2a-2c, 4),

10 characterized by

memory means (8), permanently connected to the program-
controlled control means (6, 7) locally, for storing
individual user data defining the respective user's
possible scope of use of the program-controlled
15 apparatus (1), the program-controlled control means (6,
7) driving the hardware device (2a-2c, 4) only within
the scope of use defined by the individual user data.

2.   The program-controlled apparatus as claimed in
claim 1,

20 characterized

in that the program-controlled control means (6, 7)
comprises a central control unit (6) and a database (7)
which provides operating data for the system software,
the central control unit (6) being designed such that
25 it accesses the individual user data stored in the
memory means (8) and, on the basis of this individual
user data, reads out particular operating data which is
stored in the database (7) and corresponds to the
respective user's possible scope of use of the program-
30 controlled apparatus (1), and drives the hardware
device (2a-2c, 4) on the basis of this operating data
read out.

3.   The program-controlled apparatus as claimed in
claim 2,

35 characterized

in that the database is part of the system software (7)
for the program-controlled apparatus (1).

4.   The program-controlled apparatus as claimed in claim 2 or 3,
characterized
in that the operating data stored in the database
5   defines all the service features offered by the program-controlled apparatus (1).

5.   The program-controlled apparatus as claimed in claim 4,
characterized
10 in that the individual user data stored in the memory means (8) defines the service features of the program-controlled apparatus (1) which are only accessible to the respective user.

6.   The program-controlled apparatus as claimed in
15 one of the preceding claims,
characterized by
identification means (9) for inputting an identification code,
the program-controlled control means (6, 7) being
20 designed such that they allow the hardware device (2a-2c, 4) to be controlled independently of the individual user data stored in the memory means (8) if the identification code input using the identification means (9) matches a particular prescribed access code.

25 7.   The program-controlled apparatus as claimed in claim 6 and one of claims 2-5,
characterized
in that the program-controlled control means (6, 7) are designed such that they allow the hardware device (2a-
30 2c, 4) to be controlled on the basis of the entire operating data stored in the database, independently of the individual user data stored in the memory means (8) if the identification code input using the identification means (9)

35

matches the particular access code.

8.   The program-controlled apparatus as claimed in claim 6 or 7,

characterized

 5   in that the identification means (9) comprise a smart card reader.

9.   The program-controlled apparatus as claimed in claim 2,

characterized

10   in that the memory means (8) are incorporated in the backplane of the central control unit (6).

10.   The program-controlled apparatus as claimed in one of the preceding claims,

characterized

15   in that the memory means (8) comprise a memory chip.

11.   The program-controlled apparatus as claimed in one of the preceding claims,

characterized

in that the program-controlled apparatus (1) is a

20   program-controlled telecommunications system,

the hardware device (2a-2c, 4) comprising switching means (4) for setting up a communication link between the subscribers associated with the telecommunications system.

GR 98 P 1839

Abstract

Program-controlled apparatus

        Program-controlled apparatus (1), in particular
in the form of a program-controlled telecommunications
system, in which a memory chip (8) is used which has
individual user data programmed into it when the
apparatus is delivered, said individual user data
defining the particular user's available scope of use
of the system software (7) for the program-controlled
apparatus (1). This ensures that the system software
(7) delivered is able to run only within the scope
ordered by the respective user and covered by the
purchased license. The memory chip (8) is, in
particular, permanently accommodated in the multilayer
backplane of the central control unit (6) of the
program-controlled apparatus (1), with the result that
the memory chip (8) cannot be isolated from the central
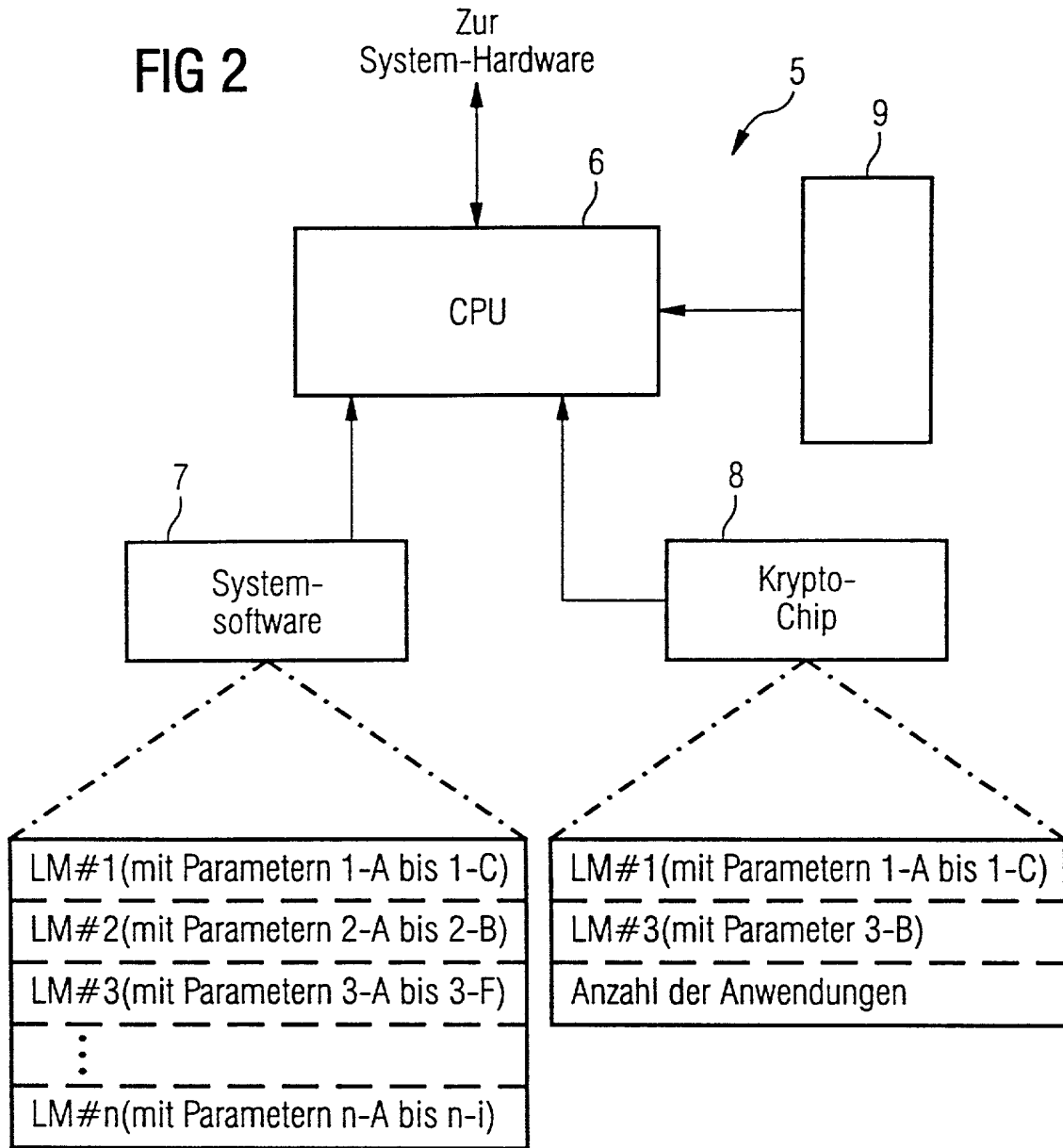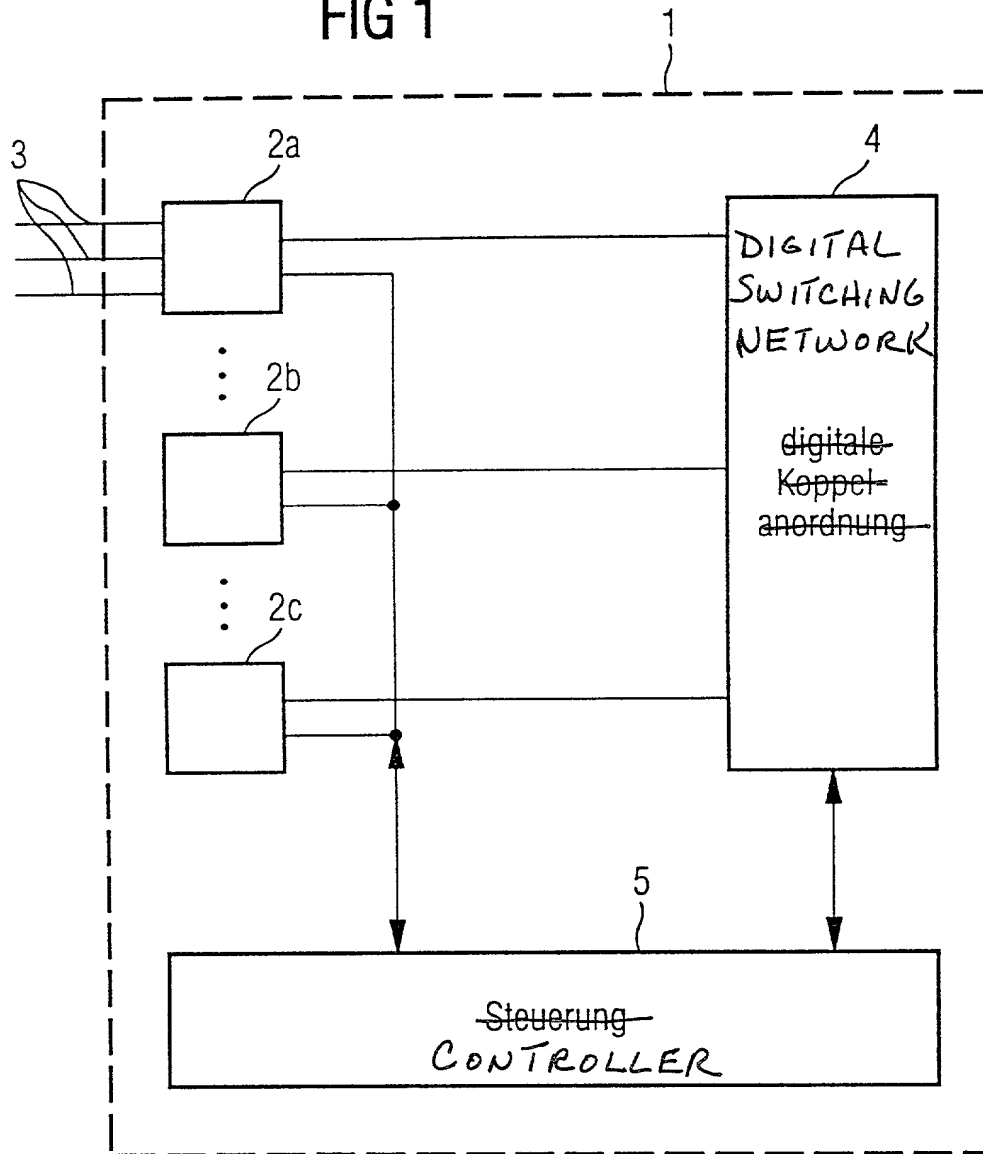control unit (6) by a user.

Figure 2

FIG 2

Zur
System-Hardware

CPU

Krypto-
Chip

System-
software

LM#1(mit Parametern 1-A bis 1-C)
LM#2(mit Parametern 2-A bis 2-B)
LM#3(mit Parametern 3-A bis 3-F)
⋮
LM#n(mit Parametern n-A bis n-i)

LM#1(mit Parametern 1-A bis 1-C)
LM#3(mit Parameter 3-B)
Anzahl der Anwendungen

FIG 1

DIGITAL SWITCHING NETWORK

~~digitale Koppelanordnung~~

~~Steuerung~~ CONTROLLER

Declaration and Power of Attorney For Patent Application
Erklärung Für Patentanmeldungen Mit Vollmacht
German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

As a below named inventor, I hereby declare that:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

My residence, post office address and citizenship are as stated below next to my name,

dass ich, nach bestem Wissen der ursprungliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Programmgesteuerte Vorrichtung

deren Beschreibung

the specification of which

(zutreffendes ankreuzen)

(check one)

[X] hier beigefügt ist.

[ ] is attached hereto.

[ ] am _____ als
PCT internationale Anmeldung
PCT Anmeldungsnummer _____
eingereicht wurde und am _____
abgeandert wurde (falls tatsächlich abgeandert).

[ ] was filed on _____ as
PCT international application
PCT Application No. _____
and was amended on _____
(if applicable)

Ich bestatige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

German Language Declaration

Prior foreign appplications
Priorität beansprucht

Priority Claimed

198 24 814.8	Germany	03. Juni 1998	☒	☐
(Number)	(Country)	(Day Month Year Filed)	Yes	No
(Nummer)	(Land)	(Tag Monat Jahr eingereicht)	Ja	Nein

			☐	☐
(Number)	(Country)	(Day Month Year Filed)	Yes	No
(Nummer)	(Land)	(Tag Monat Jahr eingereicht)	Ja	Nein

			☐	☐
(Number)	(Country)	(Day Month Year Filed)	Yes	No
(Nummer)	(Land)	(Tag Monat Jahr eingereicht)	Ja	Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozeßordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35. United States Code. §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occured between the filing date of the prior application and the national or PCT international filing date of this application.

(Application Serial No.) (Anmeldeseriennummer)	(Filing Date) (Anmeldedatum)	(Status) (patentiert, anhängig, aufgegeben)	(Status) (patented, pending, abandoned)

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And I hereby appoint

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